ORIGINAL ARTICLE

Feeding Practices of Stable Term and Late Preterm Neonates Born at a Tertiary Hospital in the Philippines during the COVID-19 Pandemic

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ABSTRACT

Objective. We aimed to evaluate the impact of maternal COVID-19 infection and separation of the mother-baby dyad on feeding practices by determining modes of feeding upon discharge and following up at 2-3 days, 14 days, and 1 month post-discharge.

Methods. This was a prospective observational cohort study conducted at the Philippine General Hospital, a tertiary government COVID-19 referral center in Manila. Mothers who delivered between the months of July and August 2021, and whose COVID-19 status was known were followed up on their baby's mode of feeding at 2-3 days, 14 days, and 1 month post-discharge via phone call. For babies of COVID-19 positive mothers, presence of any symptoms (up to the 14-day time point only) as well as adherence to infection prevention and control practices were also identified.

Results. For all time points post-discharge, breastfeeding rates were higher in babies born to COVID-19-negative mothers and in those who were roomed in. However, the differences were not statistically significant. Of the 108 infants, 72.90% remained exclusively breastfed by 1 month of age, with 4.67% formula-fed and 22.43% on mixed feeding. Perception of insufficient milk supply was the most common reason for shifting to formula or mixed feeding. We found a significantly higher direct breastfeeding rate upon discharge in the roomed-in population compared to those admitted to the NICU. Risk factors affecting breastfeeding at 1 month of age was the presence of COVID-19 infection in the mother and mother-baby separation due to NICU admissionCOVID-19-positive mothers were 66.02% less likely (p=0.016, 95% CI 0.1411 to 0.8183) to still be breastfeeding at 1 month, and separation was not found to be a significant risk factor.

Conclusions. Feeding practices can be affected not only by COVID-19 infection in the mother and its attendant difficulties such as prolonged hospital stay and physical and social isolation, but also by limitations in the hospital environment that can have an impact on breastfeeding education, support, and opportunities for mother-child bonding.

Keywords: breastfeeding, feeding practices, COVID-19 pandemic

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INTRODUCTION

Since the first coronavirus disease 2019 (COVID-19) infection was confirmed last Dec 2019 in Wuhan, a city from the province of Hubei, China, up to September 2021, a total of more than 230 million people have been infected and over 4 million have died.[1] Early during the pandemic, it was clear that human-to-human transmission was the

most common route of transmission[2], however, information on vertical transmission and transmission of the virus to the neonate through breast milk remained scarce. Due to this uncertainty, initial guidelines of various societies and organizations around the world differed, with most following the Chinese approach of temporary separation of COVID-19-positive mothers and their neonates.[3] In contrast, the World Health Organization (WHO) continued to advocate rooming-in and breastfeeding with precautions[4], stating that the benefits of breastfeeding substantially outweigh the potential risks of transmission, and the guidelines of countries such as Italy and the United Kingdom followed this approach.[5,6] Eventually, as the pandemic continued to affect many parts of the world, data emerged showing mostly mild cases of COVID-19 infection in children[7], low certainty of transmission via breastmilk[8,9], as well as a paucity of evidence of neonatal deaths during hospitalization in the peripartum period[10], hence the guidelines of many countries including the Philippines eventually shifted[11,12] to reflect the WHO recommendation. Aside from transmission via breast milk, there has also been considerable interest in the feeding practices of neonates born during the pandemic. Not only is non-separation affected, but mothers have also had to face unique challenges such as lack of breastfeeding support, feelings of isolation and uncertainties about the safety of breastfeeding during the pandemic[13], and decrements in their mental well-being with higher perceived stress[14] have also been documented leading to earlier breastfeeding cessation, especially among women from less financially capable backgrounds or those belonging to minorities.[13,15,16]

Our study is the first in our institution that examined feeding practices in neonates born during the pandemic. We aimed to compare feeding practices between neonates of COVID-19-positive and COVID-19-negative mothers, and between neonates who were roomed in and were separated from their mothers, as well as to determine whether COVID-19 infection and mother-baby separation were risk factors that affected breastfeeding rates at 1 month of age.

MATERIALS AND METHODS

Study Design and Participants

This was a prospective observational cohort study conducted in the Philippine General Hospital, a tertiary government hospital in the country's capital that has served as one of the few COVID-19 referral centers in the country since March 23, 2020, with 130 beds allocated for COVID-19 cases out of its 1,500-bed capacity.[17] The annual births in the hospital range from 4000-7000 and its Neonatal Intensive Care Unit (NICU) houses a 40-bed capacity.[18] The study was done over a 2-month period beginning July 1 up to August 1 2021. Sample size was computed to be 138, using 90% as the breastfeeding outcome in COVID-19- negative mothers based on a previous study.[19]

Inclusion Criteria

The population of interest identified were mothers and their live term or preterm neonates born during the said period, whose COVID-19 status was known and were followed up to one month post-discharge.

Exclusion Criteria

Excluded from the study were term or preterm neonates who were severely ill, had multiple congenital anomalies that prevented feeding per-orem, had neurologic impairment, and extremely premature neonates with a projected prolonged stay at the NICU for management and upbuilding.

Baseline Studies

Identified mothers admitted at the maternity wards were approached by the principal investigator and informed consent was obtained. Baseline characteristics of mothers including age, gravida, parity, presence of comorbidities, manner of delivery, presence of COVID-19 symptoms, and COVID-19 status were obtained from review of medical charts. Baseline neonatal characteristics included pediatric aging, birthweight, admission status (roomed in at the ward or admitted to NICU), length of stay, morbidities, COVID-19 status, presence of COVID-19 symptoms, as well as mode of feeding (breastfeeding or feeding with expressed breast milk) were obtained in the same manner. COVID-19 status of both mothers and babies was determined via nasopharyngeal swab SARS-CoV-2 RT PCR testing. Babies of COVID-19-positive mothers were swabbed immediately after delivery, and again on the 24th hour of life if the initial swab turned out positive. No repeat swab was done if the initial swab was negative.

Follow-up Procedure

Upon discharge, all mothers were advised on newborn care at home, including exclusive breastfeeding per demand, and were given breastfeeding guides (Appendix). A hotline for contacting the NICU was also provided for any concerns. For COVID-19-infected mothers in particular, they were advised to practice mask-wearing and hand hygiene during breastfeeding, and to observe distancing when babies would not be breastfeeding. Follow up by Neonatology fellows and the principal investigator were set at the following days post-discharge: 2-3 days, 14 days, and 1 month. Mothers were contacted via cellular phone and asked regarding the mode of feeding of the neonate, presence of any symptoms (up to the 14-day time point only), adherence to infection prevention and control practices (by the COVID-19-positive mother only), and reasons for shifting mode of feeding, if identified.

Statistical Analysis

Descriptive statistics was used to summarize the demographic and clinical characteristics of the patients. Frequency and proportion were used for categorical variables, median and inter quartile range for non-normally distributed

Table 1. Demographic and Clinical Profile of the Mothers

	Mother's COVID-19 status			*P*-value
	Total (n=123)	Positive (n=41, 33%)	Negative (n=82, 67%)	
	Frequency (%); Mean ± SD; Median (IQR)			
Age	29.39 ± 6.13	30.22 ± 6.47	28.96 ± 5.95	0.287
Gravida	2 (1 to 4)	2 (1 to 5)	2 (1 to 4)	0.813
Parity	1 (0 to 2)	1 (0 to 3)	1 (0 to 2)	0.847
Diagnosed comorbidities				
GDM, overt DM	17 (14.05)	8 (20)	9 (11.11)	0.265
Gestational hypertension	10 (8.26)	6 (15)	4 (4.94)	0.080
Bronchial asthma	7 (5.79)	2 (50)	5 (6.17)	1.000
Anemia	6 (4.96)	2 (50)	4 (4.94)	1.000
Pre-eclampsia	6 (4.96)	1 (2.5)	5 (6.17)	0.662
Hepatitis B	6 (4.96)	1 (2.5)	5 (6.17)	0.662
Obesity	6 (4.96)	1 (2.5)	5 (6.17)	0.662
UTI/asymptomatic bacteriuria	3 (3.48)	0 (0.0)	3 (3.7)	0.550
Others	12 (9.76)	3 (7.32)	9 (10.98)	0.749
Manner of delivery				0.799
Vaginal delivery	61 (49.59)	21 (51.22)	40 (49.78)	
Caesarean section (including low-segment and classical)	62 (50.41)	20 (48.78)	42 (51.22)	

Table 2. Symptoms of the Mother with COVID-19 Infection (n=29)

Symptoms	Frequency (%)
Cough	8 (19.52)
Fever	7 (17.07)
Difficulty of breathing	3 (7.32)
Anosmia	3 (7.32)
Ageusia	3 (7.32)
Colds	2 (4.88)
Sore throat	1 (2.44)
Loose stools	1 (2.44)
Headache	1 (2.44)

continuous variables, and mean and SD for normally distributed continuous variables. Independent Sample T-test, Mann-Whitney U and Fisher's Exact/Chi-square test was used to determine the difference of mean, rank, and frequency, respectively, between positive and negative mothers for COVID-19. Odds ratio and corresponding 95% confidence intervals from binary logistic regression were computed to determine significant factors of exclusive breastfeeding at 1 month. All statistical tests were two tailed tests. Shapiro-Wilk was used to test the normality of the continuous variables. Missing variables were neither replaced nor estimated. Null hypotheses were rejected at 0.05α-level of significance. STATA 13.1 was used for data analysis.

This study was approved by the University of the Philippines Research Ethics Board (study # 2021-258-01).

RESULTS

A total of 123 mothers and their 126 babies (including 3 sets of twins) met the inclusion criteria and were included in the study. Of the 123 mothers, 41 were COVID-19-positive (33%), and 82 were COVID-19-negative (67%). The mean age of mothers was 29 ± 6.13 years old, with mean gravida of 2 and mean parity of 1. The most common comorbidities were diabetes mellitus (14.05%, including both gestational and pregestational), and gestational hypertension (8.26%). There was an almost equal rate of vaginal delivery (49.59%), and Caesarean section (50.41%) (Table 1).

Of the COVID-19-positive mothers (Table 2), cough was the most common symptom (19.52%) at the time of admission, followed by fever (17.07%). Sixteen mothers (39.02%) were asymptomatic.

Among the neonates (Table 3), there was an almost equal distribution of males (48.41%) and females (51.59%). Most of the neonates included in the study were term (84.13%). Most babies were able to complete the 4 steps in Essential Intrapartum Newborn Care (EINC) (74.6%). Among those with incomplete EINC, skin-to-skin and non-separation were the commonly affected steps, with 19 out of the 32 babies (59.38%) not completing both the skin-to-skin and non-separation steps. Respiratory distress was the most common indication (81.25%) for not completing EINC. A majority of the babies were roomed with their mothers (74.6%) after delivery, with a mean length of stay of 4 days. Babies who required NICU admission (25.4%) were mostly diagnosed with transient tachypnea of the newborn (16.67%) and stayed for a mean of 4 days.

On follow up, only 108 mothers could be contacted. The babies of the 15 mothers (2 COVID-19-positive, 13 COVID-19-negative) who could not be contacted were no longer included in the analysis for the mode of feeding. One baby did not have information on feeding practice at the 1-month time point as she had not yet reached 1-month old at the time of follow up.

Table 3. Demographic and Clinical Profile of the Neonates according to Maternal COVID-19 Status

	Mother's COVID-19 status			*P*-value
	Total (n=126)	Positive (n=42, 33%)	Negative (n=84, 67%)	
	Frequency (%); Mean ± SD; Median (IQR)			
Sex				0.614
Male	61 (48.41)	19 (45.24)	42 (50)	
Female	65 (51.59)	23 (54.76)	42 (50)	
Pediatric aging	37.86 ± 1.81	38.31 ± 1.57	37.63 ± 1.89	0.047
Birthweight	2802 ± 486	2965 ± 440	2722 ± 491	0.008
Completed Essential Intrapartum Newborn Care (EINC)				1.000
Yes	94 (74.6)	31 (73.81)	63 (75)	
No	32 (25.4)	11 (26.19)	21 (25)	
Indication of incomplete EINC (n=32)				0.679
Respiratory distress	26 (81.25)	9 (81.82)	17 (80.95)	
Maternal condition	2 (6.25)	0 (0.0)	2 (9.52)	
Apnea	2 (6.25)	1 (9.09)	1 (4.76)	
Caput	1 (3.13)	1 (9.09)	0 (0.0)	
Fetal intracardiac focus	1 (3.13)	0 (0.0)	1 (4.76)	
Initial admission				0.082
NICU	32 (25.4)	15 (35.71)	17 (20.24)	
Ward	94 (74.6)	27 (64.29)	67 (79.76)	
Length of stay	4 (3 to 5)	4 (3 to 5)	4 (3 to 5)	0.977
Diagnosed conditions				
Transient tachypnea of the newborn	21 (16.67)	7 (16.67)	14 (16.67)	1.000
Indirect hyperbilirubinemia	10 (7.94)	1 (2.38)	9 (10.71)	0.163
Neonatal pneumonia	7 (5.56)	4 (9.52)	3 (3.57)	0.221
Early-onset sepsis	7 (5.56)	0 (0.0)	7 (8.33)	0.094
Others	11 (8.73)	4 (9.52)	7 (8.33)	1.000

Upon discharge, most babies of both COVID-19-positive and COVID-19-negative mothers were directly breastfeeding (Table 4). During succeeding time points, different feeding practices emerged: majority were still directly breastfeeding, however one mother was directly breastfeeding her twins and giving them expressed donor milk due to insufficient supply for the babies, and one baby who was separated from his mother was being given expressed donor milk. Breastfeeding rates gradually went down, with only 71.96% percent in both populations still directly breastfeeding at the 1-month time point. The population of COVID-19-negative mothers had higher breastfeeding rates for all time-points, however the difference in breastfeeding rates with the COVID-19-positive population was not statistically significant. When the reasons for shifting in feeding were asked, most mothers stated the perception of insufficient milk supply as the most common cause (41.38%) for either shifting purely to formula feeding or starting mixed feeding.

The mode of feeding was also compared in babies based on whether they were roomed in with their mothers at the ward or separated due to NICU admission. Breastfeeding rates also gradually declined with time, with those who were roomed in having higher breastfeeding rates, however, the only significant difference between populations was seen in the mode of feeding prior to discharge (Table 5).

Adherence to safety measures by COVID-19-positive mothers was also asked during follow up (Table 6). Most complied with masking (91.18%) and hand hygiene (94.12%), however, only 70.59% complied with distancing. In monitoring for symptoms up to the 14-day time point, three babies (one born to COVID-19-positive, two born to COVID-19-negative) presented with flu-like symptoms that required intervention.

Separation of the mother-baby dyad due to NICU admission and COVID-19 infection were identified as risk factors that could affect feeding at 1 month (Table 7). Our data show that babies admitted to the NICU were 21.25% less likely to breastfeed than those who were roomed in with their mothers, however this is not a statistically significant risk factor. COVID-19-positive mothers, however, were found to be significantly less likely to still be exclusively breastfeeding babies by one month of age.

DISCUSSION

It is known that breastfeeding is the safest, most reliable method of feeding during an emergency. The disadvantages, and even harm, of not breastfeeding are well-documented. The timing of breastfeeding initiation is also important, as the NEOVITA study group pointed out in their 2016 study[20], with those infants breastfeeding within the first hour of life having lower mortality rates compared to those who initiated at a later time. The event of a novel virus that quickly resulted in a global pandemic led to a disruption

Table 4. Mode of Feeding based on Mother's COVID-19 Status

	Mother's COVID-19 status			*P*-value
	Total	Positive	Negative	
	Frequency (%); Mean ± SD; Median (IQR)			
Mode of feeding				
Discharge (n=126)				0.068
Directly breastfeeding	104 (82.54)	31 (73.81)	73 (86.9)	
Cup feeding with EBM	22 (17.46)	11 (26.19)	11 (13.10)	
2-3 days after discharge (n=108)				0.296
Directly breastfeeding	97 (89.81)	34 (85.0)	63 (92.65)	
Formula	4 (3.70)	3 (7.5)	1 (1.47)	
Mixed	6 (5.56)	3 (7.5)	3 (4.41)	
Expressed donor breast milk	1 (0.93)	0 (0.0)	1 (1.47)	
14 days after discharge (n=108)				0.647
Directly breastfeeding	91 (84.26)	33 (82.5)	58 (85.29)	
Formula	5 (4.63)	2 (5.0)	3 (4.41)	
Mixed	9 (8.33)	5 (12.5)	4 (5.88)	
Directly breastfeeding + expressed donor breast milk	2 (1.85)	0 (0.0)	2 (2.94)	
Expressed donor breast milk	1 (0.93)	0 (0.0)	1 (1.47)	
1 month after discharge (n=107)				0.063
Directly breastfeeding	75 (70.09)	23 (58.97)	52 (76.47)	
Formula	5 (4.67)	2 (5.13)	3 (4.41)	
Mixed	24 (22.43)	14 (35.9)	10 (14.71)	
Directly breastfeeding + expressed donor breast milk	2 (1.87)	0 (0.0)	2 (2.94)	
Expressed donor breast milk	1 (0.93)	0 (0.0)	1 (1.47)	
Reasons for shifting to mixed feeding or formula feeding (n=29)				
Perception of insufficient milk supply	12 (41.38)	6 (37.5)	6 (46.15)	0.716
Mother had to return to work or would be frequently away	5 (17.24)	2 (12.5)	3 (23.08)	0.632
Mother had prolonged illness that required separation	5 (17.24)	4 (25.0)	1 (7.69)	0.343
Multiple gestation	3 (10.34)	2 (12.5)	1 (7.69)	1.000
Baby would not be satisfied	3 (10.34)	3 (18.75)	0 (0.0)	0.232
Mother with comorbid illness	2 (6.9)	0 (0.0)	2 (15.38)	0.192
Nipple fissure or pain, mastitis	1 (3.45)	0 (0.0)	1 (7.69)	0.448
Advised to start formula	1 (3.45)	1 (6.25)	0 (0.0)	1.000

Table 5. Mode of Feeding Based on the Type of Initial Admission

	Ward (n=94)	NICU (n=32)	*P*-value
	Frequency (%)		
Discharge			<0.001
Directly breastfeeding	90 (95.74)	14 (43.75)	
Cup feeding with EBM	4 (4.26)	18 (56.25)	
2-3 days after discharge (n=108)			0.147
Directly breastfeeding	75 (92.59)	22 (81.48)	
Formula	2 (2.47)	2 (7.41)	
Mixed	4 (4.94)	2 (7.41)	
Expressed donor breast milk	0 (0.0)	1 (3.7)	
14 days after discharge (n=108)			0.324
Directly breastfeeding	70 (86.42)	21 (77.78)	
Formula	3 (3.7)	2 (7.41)	
Mixed	6 (7.41)	3 (11.11)	
Directly breastfeeding + expressed breast milk	2 (2.47)	0 (0.0)	
Expressed donor breast milk	0 (0.0)	1 (3.7)	
1 month after discharge (n=107)			0.447
Directly breastfeeding	58 (71.6)	17 (65.38)	
Formula	4 (4.94)	1 (3.85)	
Mixed	17 (20.99)	7 (26.92)	
Directly breastfeeding + expressed breast milk	2 (2.47)	0 (0.0)	
Expressed donor breast milk	0 (0.0)	1 (3.85)	

Table 6. Adherence to Safety Measures of the Mother with COVID-19 Infection (n=34)

	Frequency (%)
Masking	
No	1 (2.94)
Yes	31 (91.18)
Unknown	2 (5.88)
Hand hygiene	
No	0 (0.0)
Yes	32 (94.12)
Unknown	2 (5.88)
Distancing	
No	8 (23.53)
Yes	24 (70.59)
Unknown	2 (5.88)

Table 7. Factors Associated with Feeding Rates at 1 Month of Follow up

Parameters	Odds ratio	95% CI	*P*-value
Separation due to NICU admission	0.7875	0.2986 to 2.0770	0.629
Presence of COVID-19 infection in the mother	0.3398	0.1411 to 0.8183	**0.016**

in practices in the Philippines such as the EINC that encouraged early breastfeeding. In our institution where the study was conducted, the practice since the pandemic started had been to admit and cohort babies of COVID-19-positive or unscreened, symptomatic mothers to the NICU, and this continued for a year before rooming in and EINC were resumed last April 2021, taking into account the changes in the recommendation of the WHO, Department of Health, the Philippine Society of Newborn Medicine[12], as well as the capacity of the wards to accommodate mother-baby dyads. COVID-19-positive mothers were then advised to wear surgical masks while breastfeeding, to practice hand hygiene when handling the baby, and were instructed to place babies in isolettes 1 meter from the mother's beds. A cross-sectional study done by Clemente et al.[21] last April-August 2020 when rooming in and EINC were still not the standard of care showed mostly good outcomes for the 209 mothers and their babies, however feeding practices were not mentioned.

Our data show a trend of higher breastfeeding rates in COVID-19-negative mothers compared to COVID-19-positive mothers for all time-points of follow up, however, the differences were not statistically significant. This trend can probably be explained by the difference in set-up of the COVID-19 and non-COVID-19 maternity wards in our institution, as COVID-19-negative mothers are allowed to have their partners or other family members with them, which can be a source of support, and there are probably more opportunities for breastfeeding education since caregiver-patient interaction in the non-COVID-19 maternity ward is not constrained by having isolation areas or having to don protective gear.

When comparing feeding practices between those roomed in and those separated due to NICU admission, initial breastfeeding rates just prior to discharge were significantly higher in those roomed in rather than those separated from their mothers and admitted to the NICU. A probable contributing factor to this is that the pandemic coincided with renovations to the old NICU, with the temporary NICU being a smaller space that led to logistic difficulties in allowing breastfeeding and even Kangaroo Mother Care (KMC), resulting in only a smaller number of mothers who can come to the NICU to breastfeed. This restriction in space was compounded also by the need for social distancing during the pandemic. Taken together, these limitations lessen not only opportunities for breastfeeding education and support, but also opportunities for mother-child bonding. In the succeeding time points, those babies who were initially roomed in still had higher breastfeeding rates than those who were initially admitted at the NICU, however, the difference was not significant.

The 1-month time point was chosen for follow up since this coincides with the time that breastfeeding difficulties and cessation are usually reported.[22,23] Odds ratio was computed for COVID-19 infection in the mother and separation due to NICU admission affecting breastfeeding at one month. COVID-19-positive mothers were found to be 66.02% significantly less likely to still be exclusively breastfeeding babies by one month of age, probably due to COVID-19-positive mothers requiring prolonged hospital stay due to severity of illness and hence separation from their babies. Isolation at home due to COVID-19 could also lead to lack of face-to-face breastfeeding support from their partners, other family members, and healthcare providers.

Taking into account that those directly breastfeeding and those no longer directly breastfeeding but were being given expressed breast milk fall under the WHO definition of exclusive breastfeeding, the overall rate of exclusive breastfeeding for both populations is 78/107 (72.90%). This rate is higher than 63.5% which is the rate of exclusively breastfed infants 1 month of age recorded in the 2018-2019 Food and Nutrition Research Institute survey.[24] Among the reasons for shifting to a mode of feeding other than breastfeeding, a perception of insufficient milk was the most common reason for both populations, which coincides with what is in the literature. At the 1-month time point follow up, five mothers stated that returning to work that would require separation with their babies was stated as their reason for shifting to mixed feeding, with some stating that formula was introduced in order for the baby to get used to the taste of formula. Fear of transmission of the virus to the neonate was not stated as a reason for shifting mode of feeding among COVID-19-positive mothers. For the few mothers who volunteered the information that they were comfortable breastfeeding despite being infected, most stated that they were properly advised to follow the safety precautions and were reassured regarding the safety of breastfeeding since

they were able to follow the precautions. Among the safety precautions advised prior to going home, distancing had the least compliance. This could be due to inconsistent availability of isolettes and bassinets that could be provided for use in the COVID-19 maternity wards, resulting in the baby usually being placed in the bed with the mother despite not breastfeeding while still admitted, a practice that probably carried over to the home setting upon discharge.

Lastly, all babies on follow up were well except for the three babies who presented with flu-like symptoms up to about 14 days after discharge that required medical intervention, with two requiring admission and one requiring an oral antibiotic. One baby tested positive for SARS-CoV-2 virus upon exposure to three household members who were positive. He was intubated and on pressors but was eventually discharged well after 18 days in the hospital. The second baby requiring admission also tested positive for SARS-CoV-2 virus and was on oxygen support via nasal cannula, however he had no known exposure to any other positive case. The third baby presented with a cough on the 7th day of life and was prescribed cephalexin. No testing was done for him or for any other family members.

CONCLUSION

Our study is the first in our institution that followed up the feeding practices of babies born during the COVID-19 pandemic up to one month of age. Our results show that feeding practices can be affected not only by COVID-19 infection in the mother and its attendant difficulties such as prolonged hospital stay and physical and social isolation, but also by limitations in the hospital environment that can have an impact on breastfeeding education, support, and opportunities for mother-child bonding.

Recommendations

Our study had several limitations. The study was carried out solely in a government hospital, wherein mothers from less financially capable and educated backgrounds were concentrated, which could be a factor in breastfeeding choices, hence a multi-center study involving government and private institutions, lying-in clinics could be conducted in order to recruit mothers with different backgrounds. Other studied indicators such as maternal educational status and employment, number of other children in the household, the effect of interventions such as membership to breastfeeding support groups, consultation with a lactation specialist, and the provision of breastfeeding education[25-27], as well as the development of depression, anxiety[28], and other long COVID-19 symptoms in the case of COVID-19-positive mothers that could contribute to breastfeeding rates were not included in the analysis in part due to the short follow up time and could be the subject of further study. No comparisons were made to pre-pandemic breastfeeding rates during the time points specified in the study. Lastly, a longer follow up time of up to six months would be desirable to evaluate effects on the recommended time for exclusive breastfeeding.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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APPENDIX

Philippine General Hospital
The National University Hospital
University of the Philippines Manila
Department of Pediatrics
Division of Newborn Medicine
PHIC-Accredited Health Care Provider
ISO 9001 Certified

Gabay sa Breastfeeding

Mahal Kong Ina

"I-breastfeed po ninyo ako – huwag pong powdered milk. Ayoko pong maging sakitin at madagdagan ang gastusin ninyo. ***Bago niyo ako i-breastfeed, maghugas po kayo ng inyong mga kamay at magsuot ng face mask.****"*

"Oras na po para ako i-breastfeed kung namamasdan ninyo ang mga sumusunod…

Picture taken from Queensland health booklet Child health information: your guide to the first twelve months .

Ang pag-iyak ay huling sinyales ng gutom. Ilagay ang aking bibig sa inyong suso at bubuka nang malaki ang aking bibig kung ako ay dedede na.

Dapat pong magkadikit ang dibdib at tiyan natin. Ganito rin dapat ang paghawak sa suso.

Side-lying position

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"Ang tamang hakab o latch *ay ang halos buong* areola *ang nasa loob ng bibig ko, hindi* nipple *lamang–para maging masaya at* relaxed *tayong dalawa at hindi masugatan ang inyong* nipple*."*

Signs of good attachment
Chin touching breast
Mouth wide open
Lower lip turned outwards
Areola: more visible above than below the mouth

Signs of poor attachment
Chin away from breast
Mouth not wide open
Lower lip pointing forward, or turned in
Areola: more visible below than above, or equal amounts

"Kung hindi po tayo magkasama, magtanggal po kayo ng gatas sundan ang mga letrato ng mga ito (Hand Express) ***kada 2–3 na oras****. Kapag hindi ninyo itong ginagawa ng madalas, mawawalan kayo ng gatas at ayoko po ng powdered milk."*

Press (back towards your chest)

Compress

Relax

Mag-ipon ng gatas sa pamamagitan ng **hand expression. Ganito ang itatagal ng gatas kapag inilagay sa mga susususnod na lugar:**

Freezer (2 pintuan ang labas ng refrigerator)	3 buwan
Freezer (1 pintuan ang labas ng refrigerator)	2 linggo
Refrigerator	1–8 araw
Cooler na may frozen gel packs o yelo	1 araw
Wala sa refrigerator	4–6 oras

"Paalala po…kung tayo ay hindi magkasama, sa baso o cup ipalagay ang gatas ninyo. Huwag po sa bote. Mas ligtas po ako. Hindi rin po ako malilito sa nipple ninyo at nipple ng bote kapag magkasama na muli tayo."

"Maraming Salamat, Mahal kong Ina"